SURGICAL RESEARCH EXPERIENCE

Section1: Overview

The Department of Surgery encourages USUHS medical students to learn about surgical research. Interested students can see if they would like to make research a part of their medical career by participating in faculty research projects. Several faculty members are active in a variety of research fields. A list of faculty members and their research initiatives is summarized in Section 3.

Section 2: Research Experiences Offered

The Department of Surgery offers four types of medical student research experiences.

a. **MS IV Surgical Research Elective:** (4 or 8 weeks)
b. **MS I Summer Research Experience:** This experience is made available to select medical students during the summer between their MSI and MSII years. Students with prior service who are exempt from the specific military training qualify for the research experience.
c. **MS II Commandants Time:** Qualified students can spend a portion of their commandant's time research group over the entire academic year. Typically, a cumulative GPA of 3.0 or better and the Dean of the Students approval is needed to qualify for this experience.

NOTE

Each year students inquire about participating in research in order to gain co-authorship on a scientific publication to enhance their internship or residency application. We do not offer such a research experience and recommend students inquire with faculty at the clinical centers who may be able to support this type of request with case reports and small case series. The Department of Surgery faculty at USUHS primarily offers and educational introductory experience in research. Often students do gain co-authorship, but this comes as a by-product of a major contribution, sustained over time and not a short-term primary goal.

Section 3: Faculty Members Participating in Research

a. **William E. Bolger, M.D., Chief, Division of Surgical Research, Norman M. Rich Department of Surgery**
As an otolaryngologist, Dr. Bolger's primary research initiatives involve Sino nasal disease. Current research projects are exploring the basic pathophysiologic mechanisms in sinusitis. This research involves gene expression analysis of human Sino nasal polyposis biopsy specimens, small animal model studies of antigen presentation on host local Sino nasal immunity. For more information interested students can email wbolger@usuhs.mil .

b. **Dr. Mark Bowyer, COL, USAF, MC**

Dr. Bowyer is a practicing trauma surgeon with many research interests. As the Director of Research at David Grant USAF Medical Center from 1991-1998, he was responsible for the oversight of multiple research fellows and numerous projects resulting in publication. Currently Dr. Bowyer is involved in ongoing trauma related research involving the use of blood substitutes as a bridge to definitive care, as well as exploration of novel approached for delivering resuscitation, and preserving injured limbs.
As the current surgical director of the National Capital Area Medical Simulation Center, Dr. Bowyer is conducting ground breaking validation studies for incorporation of simulators into medical curriculum. His team at the Sim Center is also on the leading edge of developing new and improving old virtual reality simulators for the training of medical personnel. The Sim Cen is currently undergoing an exciting expansion with plans to build the worlds largest Computer Aided Virtual Environment or a CAVE (think of this as a first generation Star Trek holodeck). Prior to and upon completion of the CAVE there will be several exciting research challenges in developing and utilizing content in this project. Students at all levels with an interest in either basic science/animal research, or an interest in the new frontier of simulation are encouraged to contact Dr. Bowyer for more information at: mbowyer@usuhs.mil

c. **Dr. David G. Burris, COL, MC, USA, FACS, DMCC, Chairman, Norman M. Rich Department of Surgery**

Dr. Burris is a general/trauma/critical care surgeon with research interests in combat casualty care including hemorrhage control, shock, resuscitation and resuscitation fluids including blood substitutes, combat injury and prevention and the historical aspects of military trauma care. There is the possibility for some short history articles on combat surgery. For more information, interested students please e-mail dburris@usuhs.mil .

d. **Dr. Govindaraj Krishnamurthy, Ph.D.**

The critical value of rapid evacuation of trauma victims in the battle field is unquestioned in the military combat casualty care; but rapid evacuation may not always be possible in current and future conflicts and military engagements. If the evacuation is delayed, control of hemorrhage and fluid resuscitation assumes a more critical role in rescue, survival, and long term care of the critically injured. Because of the limited availability of fluids on the battlefield, Special Forces are now advocating Small Volume resuscitation fluids. The suitability of this strategy for delayed evacuation is being examined in our lab, along with the best resuscitation solution for the use in the field.

The primary goal of our laboratory is to identify and develop new strategies and fluids for small volume resuscitation to maintain and extend the so called "golden hour" in the trauma patients following hemorrhagic shock in the battle field using drugs which act through pharmacological modulation of chromatin by inhibiting its modifying enzyme system, chemokine inhibition, blocking chemokine receptors and inhibitors of complement cascade activation. Interested students should inquire directly to Dr. Krishnamurthy gkrishnamurthy@usuhs.mil .

e. **Dr. E. Matt Ritter, MAJ, USAF, MC**

Dr. Ritter is a fellowship trained minimally invasive surgeon and the Assistant Director, Surgical Simulation at the NCA Medical Simulation Center. His main research focus is in the use of simulation technology to train skills in laparoscopy and flexible endoscopy and he has several active protocols evaluating training issues in these areas. Clinical interests include modern treatment of hernia using novel synthetic and biomaterials as well as treatment of gastroesophageal reflux disease and other foregut conditions. Additionally the development of NOTES (Natural Orifice Transluminal Endoscopic Surgery) is an area under for future research. Dr. Ritter has several papers currently in press with USU students as co-authors and students at all levels are welcome. Interested students can either call at 301-319-8235(NNMC Hospital office) or email at eritter@usuhs.mil .

f. **David R. Welling, M.D., Associate Professor of Surgery**

Dr. David R. Welling is a general and colorectal surgeon, with interests in clinical medicine and surgical history. He would like to write a paper with a student, suitable for publication. Some ideas which come to mind include:

1. The story of the development of patient evacuation techniques during the Civil War.
2. The historical surgical sites of Washington D.C. and the stories behind the sites (i.e. the White House and Garfield's care after his gunshot wound, etc.)
3. Analysis of built-in inefficiencies of present military medical care, with recommendations for improvement of the system.
4. Long-term follow-up of active duty patients who have undergone ileoanal pouch surgery for ulcerative colitis or familial polyposis. What impact has the operation had on active-duty military service? How many are still on active duty after this operation?

Interested students should inquire directly to Dr. Welling dwelling@usuhs.mil .

g. **David Wherry, M.D., Professor of Surgery. 295-9834**

Each year we have surgeons from the Philippine General Hospital and the University of the Philippines who spend a year doing research in our department as International Scholars. The major focus of this research is hemorrhagic shock and resuscitation. Currently we have two surgeons, Dr.

Earl Gonzalez and Dr. Babei Talep who are working on projects. For more information interested students please e-mail dwherry@usuhs.mil .

h. **Shiv Srivastava, M.D., Director, The Center for Prostate Disease Research (CPDR)**

Dr. Srivastava is the Co-Director at CPDR and Professor in the Department of Surgery, USUHS. He is an established cancer researcher in a leadership position with a strong academic/ administrative record of accomplishment in the molecular biology of cancer including prostate cancer. Since 1994, Dr. Srivastava has dedicated all of his research efforts to addressing the molecular genetic alterations in prostate cancer at the CPDR. He has developed a vigorous basic science research program and unique bio-resources with a team of dedicated researchers addressing molecular genetic alterations during prostate cancer onset/progression. Dr. Srivastava's current research focuses on the discovery of prostate cancer-specific gene alterations and hormonal mechanisms using state-of-the-art gene expression profiling, positional cloning and functional genomic approaches. CPDR offers a variety of mechanisms for students to gain research exposure. Their main facility is located in Rockville, which offers an outstanding basic science laboratory experience and an equally outstanding medical database research experience. Their clinical facility is located at Walter Reed as part of the urology service. CPDR also has a laboratory on site at USUHS, which specialized in prostate cancer cell research. Dr. Shiv Srivastava directs this project. Interested students should inquire directly to Dr. Srivastava. ssrivastava@cpdr.org or ssrivastava@usuhs.mil